

Memorandum

To: John S. Sanders, Ph.D., Chief
Environmental Monitoring and
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Date: January **27**, 1998

From: **Department of Pesticide Regulation** - 1020 N Street, Room 161
Sacramento, California 95814-5624

Subject: MONITORING RESULTS FROM A RAISED TARP - NURSERY APPLICATION
IN SAN LUIS OBISPO COUNTY

Introduction - Methyl bromide is widely used as a preplant soil fumigant for control of nematodes, fungi, diseases and weeds. In 1995, approximately 13 percent of the methyl bromide use in California was in nursery applications. Nursery applications are made within a greenhouse or as a field application and may be shanked in and **tarped**, or applied as a hot-gas at the soil surface under the tarpaulin placed prior to application. The Department of Pesticide Regulation (DPR) and county agricultural commissioners have implemented permit conditions, including buffer zones, to mitigate unacceptable methyl bromide exposure. Buffer zone distances are set so that concentrations measured at this distance do not exceed 0.21 parts per million (ppm) 24-hour time-weighted average. The buffer zone distances for the methods have been determined from data received and evaluated by DPR to date. Additional monitoring was made to test and evaluate the effectiveness of the buffer zone distances.

Materials and Methods - The third field monitored was treated by raised tarp hot-gas application to a 0.2% acre field at a nursery near Nipomo (San Luis Obispo County) on September 11, 1997. In this application type, tarpaulin is secured over the field prior to application and the methyl bromide is heated and introduced under the tarp. In this case, the tarp was first filled with ambient air blown until the entire length of tarpaulin was raised, the methyl bromide was then introduced through a hose approximately four feet from the edge of the tarp. The blower continued to blow air to drive the methyl bromide to the end of the **tarped** section. The field was to be replanted to flowers. The application rate was 350 pounds per acre of formulated product, 98 percent methyl bromide/2 percent chloropicrin. The application took approximately two hours.

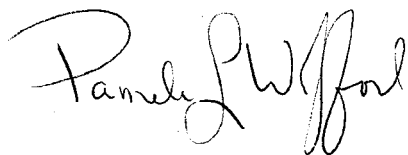


Ambient air samples were collected at 16 locations using charcoal tubes and SKC air samplers. Eight samplers were located approximately 30 feet from the field, one on each side and at each corner. Eight additional samplers were located at the resident buffer zone distance, two on each side. The samplers located south of the application were placed at the outside edge of an area treated with methyl bromide five days earlier. The tarp on the other field stayed on during the entire monitoring period. Table 1 and Figure 1 indicate the position of each sampler. A series of five samples was collected at each of the 16 locations beginning with the beginning fumigation at 10:40 a.m. Samples were collected for two 6-hour and three 12-hour periods, for a total of 48 hours.

The weather was clear and sunny during daylight and clear at night with temperatures from 59 to 77 degrees Fahrenheit. Wind speeds ranged from calm to 12.7 miles per hour with speeds 5 miles per hour or less for 70 percent of the time during monitoring. The wind blew in all directions during the monitoring period.

Results - Off-site air concentrations did not exceed DPR's target level of 0.21 parts per million 24-hour time weighted average at the resident buffer zone distance (Tables 1). Air concentrations ranged from 0.031 to 0.085 parts per million 24-hour time weighted average at the buffer zone distance. The highest concentrations were detected during the third 12-hour monitoring interval.

If you have any questions please call.

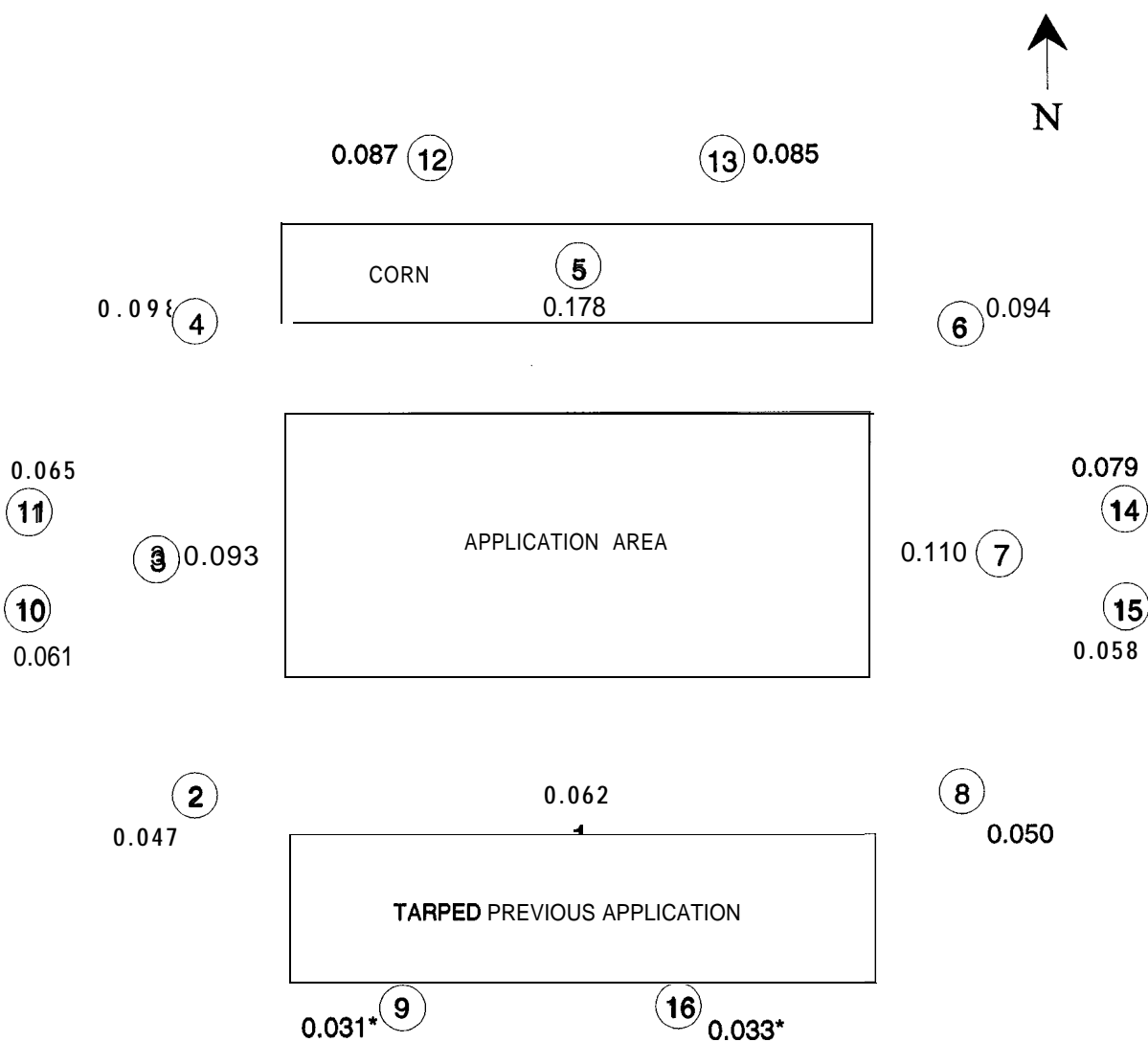


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Figure 1. The application site, sampling sites and highest 24-hour time weighted averages (parts per million). (* indicates a period of no detectable amount where $\frac{1}{2}$ the detection limit was used).



Sites 1-8 are 30 feet from edge of field
 Sites 9 and 16 are 86 feet from edge of field
 Sites 10-15 are 65 feet from edge of field

Table 1. Ambient methyl bromide air concentrations.

Sampler Location			Methyl Bromide (ppm) for Each Sampling Period				
Site	Direction	Distance (ft)	10:40 - 16:40 (6 hrs)	16:40 - 22:40 (6 hrs)	22:40 - 10:40 ¹ (12 hrs)	10:40 - 22:40 ¹ (12 hrs)	22:40 (12 hrs)
1	south	37	0.032	0.050	0.115	0.008	0.
2	southwest	35	ND ^a	0.019	0.087	0.007	0.
3	west	30	ND	0.025	0.161	0.024	0.
4	northwest	30	ND	0.029	0.173	0.023	0.
5	north	32	ND	0.045	0.329	0.028	0.
6	northeast	30	0.017	0.020	0.176	0.012	0.
7	east	30	0.064	0.046	0.199	0.022	0.
8	southeast	35	ND	0.037	0.089	0.011	0.
9	south	86	ND	0.021	0.060	ND^b	0.
10	west	65	ND	0.014	0.110	0.012	0.
11	west	65	ND	0.014	0.116	0.013	0.
12	north	65	ND	ND	0.168	0.007	0.
13	north	65	ND	0.013	0.159	0.011	0.
14	east	65	0.030	0.013	0.150	0.008	0.
15	east	65	0.039	0.016	0.107	0.010	0.
16	south	86	0.014	0.027	0.064	ND	N

¹ the time-weighted average of the concentrations in bold represent the peak 24-hour concentrations

* indicates a period of no detectable amount where ½ the detection limit was used

ND = No detectable amount; ^areporting limit = 0.010 ppm ^breporting limit = 0.005 ppm